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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------------------|---------------------|------------------|
| 10/643,061 | 08/18/2003 | Mark F. Mathias | 8540G-000091 | 4150 |
| 27572 | 7590 | 11/28/2006 | | EXAMINER |
| | | HARNESS, DICKEY & PIERCE, P.L.C. | | CHU, HELEN OK |
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| | | BLOOMFIELD HILLS, MI 48303 | | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1745 | |

DATE MAILED: 11/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|----------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/643,061 | MATHIAS ET AL. |
| Examiner | Art Unit | |
| Helen O. Chu | 1745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 07 September 2006.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-10 is/are pending in the application.
 4a) Of the above claim(s) 11-25 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-10 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date 10/25/2006.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application
 6) Other: _____.

DETAILED ACTION

1. The Applicant's Remarks/Arguments have been received on September 7, 2006. Claim 8 has been amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action.

Claim Rejections - 35 USC § 112

3. The rejections under 35 U.S.C 112, second paragraph, on claim 8 have been withdrawn because the Applicant has amended the claim.

Claim Rejections - 35 USC § 102

4. The rejections under 35 U.S.C 102 (b) on claims 1-10, as anticipated by Denton et al. have been maintained. The rejections are repeated below for convenience.
5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Denton et al. (US Patent 6,010,606).

In regard to claims 1 and 2, the Denton et al. reference teaches a PEM fuel cell (Column 1, Line 37) having an electrode plate with flow field to distribute reactant gases (Column 6, Lines 32-36), a MEA and gas diffusion electrode plates (Column 1, Line 42).

The Denton et al. reference discloses dimensionally stable (rigid) and highly flexible gas diffusion electrodes (Column 4, Lines 33-34) that are electrically conductive (Column 3, Lines 56).

In regard to claims 3-5, the Denton et al. reference discloses fibres within the matrix are oriented in the -x, and -y, with additional random orientation in the -z plane with inclusions of very short fibres with lengths of ≤ 2 mm or very fine fibres with diameters of $\leq 1\mu\text{m}$ out of a range of $0.2\text{ }\mu\text{m}$ to $50\text{ }\mu\text{m}$. It is also possible to introduce anisotropic character into the fibre matrix by using longer fibres, typically ≤ 50 mm (Column 3, Lines 40-49).

In regard to claims 6-8, the Denton et al. reference discloses gas diffusion electrodes are made of graphite surfaces (Column 2, Line 9-13). It is known in the art that graphite is a form of carbon.

In regard to claims 9 and 10, the Denton et al. reference teaches catalyst components such as metal or metal supported on carbon in the form of highly surface area are finely divided fibers (Applicant's strip; Column 3-4, 55-67 and 1-4 respectively). The reference further addresses that these metals can be stainless steel (Column 2, Line 40)

Response to Arguments

7. Applicant's arguments filed 9/7/2006 have been fully considered but they are not persuasive.

Applicant's principal arguments are:

a. Denton only discloses a highly flexible gas diffusion electrode. Nothing in Denton indicates that the gas diffusion electrode is rigid along a transverse axis and still flexible along a lateral axis. "Dimensionally stable" as used in Denton appears to describe resistance to stretching in comparison to conventional gas diffusion electrodes based on woven substrates. Thus, the Denton gas diffusion electrode having non-woven fibers appears to be highly flexible and dimensionally stable so that it cannot be stretched in the directions of the major planar faces.

In response to Applicant's arguments, please consider the following:

a. The Denton et al. reference discloses a dimensionally stable and flexible gas diffusion electrode. The invention disclosed by Denton et al. reference has flexibility and dimensionally stable along both the -x and -y-axis. The term "comprising" in claim 1 means to have limitations of the claimed language and in addition to. Therefore, along the lateral axis it has to be flexible but it can also have rigid characteristics and vice versa along the transverse axis.

Also, the Denton et al. reference discloses the conventional gas diffusion electrodes lacks flexibility due to rigid substrates or lacks good dimensional stability (by example of stretching the gas diffusion electrode). Thus to solve this problem the Denton et al. reference presents gas diffusion electrodes that are flexible but yet can retain its dimensions so that the gas diffusion electrode cannot be easily stretched. Clearly if one cannot easily stretch an object it would

stable. Furthermore, as evidence by Lawheed (US Patent 6,672,064) the term "dimensionally stable" and rigid is used synonymously (Column 9, Line 12).

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen O. Chu whose telephone number is (571) 272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOC



TRACY DOVE
PRIMARY EXAMINER